



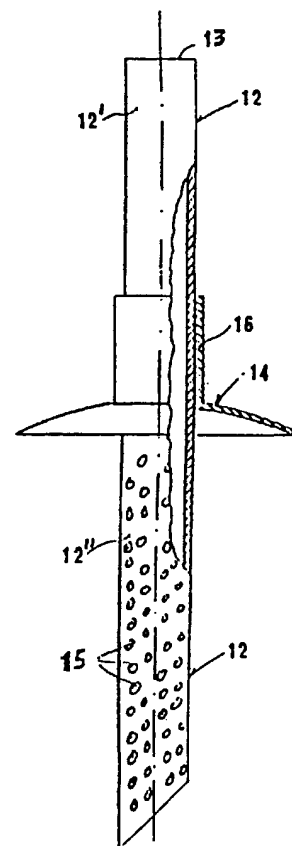
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/EP94/03498</p> <p>(22) International Filing Date: 25 October 1994 (25.10.94)</p> <p>(30) Priority Data: MI93U000983 20 December 1993 (20.12.93) IT</p> <p>(71)(72) Applicants and Inventors: BENEDETTI, Giuseppe [IT/IT]; Via Borgo del Majno, 6, I-20080 Basiglio (IT). PECORONI, Renata [IT/IT]; Via Borgo del Majno, 6, I-20080 Basiglio (IT).</p> <p>(74) Agents: SIMEONI, Lucio et al.; Sama Patents, Via Masera, 10, I-20129 Milano (IT).</p>	<p>(81) Designated States: AU, BG, BR, CA, CN, CZ, FI, HU, JP, KR, NO, NZ, PL, RO, RU, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p><b>Published</b> <i>With international search report.</i></p>	

(54) Title: DEVICE FOR SUCKING JUICE FROM CITRUS FRUIT

## (57) Abstract

The invention refers to a device for sucking juice directly from citrus fruit comprising a rigid elongated straw (12) provided with annular cup (14), concave downward, sealed or tight slidable on the straw, said cup, after the insertion of the straw into the fruit, being pushed in contact with the surface of the fruit to provide a tight sealing of the entry hole of the straw into the fruit.



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**"DEVICE FOR SUCKING JUICE FROM CITRUS FRUIT"**TECHNICAL FIELD

5       The present invention relates to a device for sucking juice directly from citrus fruits of various dimensions without squeezing the fruit, of simple construction and low cost, of easy use, which permits an efficient extraction of juice.

BACKGROUND ART

10       The prior art devices for sucking juice directly from citrus fruit have many disadvantages deriving from their complex structure, high cost, difficulty of use, necessity of manually squeezing the fruit while sucking and difficulty of regulating  
15 the squeezing pressure in order to prevent fruit rupture or juice leakage.

      One of these devices is disclosed in USP 4,889,044, which consists of a hollow tubular stem having multiple angularly disposed sections, the upper end section being provided with an  
20 annular sealing stopper, concave downward, whose hole is larger than the stem cross-section to permit the stem to act as slidable and angling member relative to the stopper.

      The stem sections under the stopper are provided with vertically spaced radial holes.

25       The disadvantages of this device are: difficulty in inserting the stem into the fruit due to the angularly disposed sections which should be inserted with a weave type motion being careful not to enlarge the entry hole; necessity of rotating the fruit and sucking the juice while manually squeezing the fruit.  
30 Otherwise by only sucking, the efficiency of the device is dra-

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stically reduced. In addition there is difficulty in regulating the squeezing pressure in order to prevent rupture of the rind or juice leakage.

The present invention overcomes all the disadvantages of the prior art devices in that provides a juice sucking device which is of simple construction, low cost, of easy insertion into the fruit, which does not require manually squeezing the fruit thereby eliminating the risk of fruit rupture and juice leakage and permits a more efficient sucking of juice in less time.

#### DISCLOSURE OF INVENTION

The device according to the present invention consists essentially of a rigid elongated straw provided with an annular cup, concave downward, sealed or tight slidable on the straw, which, following insertion of the straw into the fruit, provides a tight seal on the rim of the insertion hole into the rind thus preventing air to enter into the fruit by suction and permitting sucking of juice with an improved efficiency without manually squeezing the fruit.

It is therefore object of the present invention a device for sucking juice directly from citrus fruit comprising a rigid elongated straw, the lower portion thereof being inserted into the fruit and manually displaced in various positions within the fruit to disrupt the pulp, said straw being provided with an annular cup, concave downward, sealed on the middle part of the elongated straw or tight slidable along the straw which, after said straw insertion and displacement, is pushed in contact with the surface of the fruit to provide a tight sealing around the

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entry hole in the rind thus preventing air to enter into the fruit when the user sucks on the straw.

#### BRIEF DESCRIPTION OF DRAWINGS

5 Fig. 1 represents a frontal view, partially in cross-section, of an embodiment of the device according to the present invention.

Fig. 2 represents an enlarged frontal view, partially in cross-section of the concave annular cup of fig. 1.

10 Figures 3A, 3B and 3C represent examples of various cross-sections, different from the circular one, which the straw can have.

Referring to Fig. 1, the elongated straw 12 is tightly fitted with an annular cup 14 concave downward so as to engage the  
15 surface of the fruit, said cup being positioned at about halfway of the length of the straw so as to define an upper part 12' and a lower part 12" of the straw.

The cup 14 can be sealed on the external surface of the straw but preferably is tight slidable along the external sur-  
20 face of the straw.

The upper part of said cup is preferably provided with a collar 16 which may help cup sealing or sliding on the straw.

The cup 14 can be further provided at its periphery with a circular rigid lip (not shown) extending downward, preferably  
25 for about 0,5-2 mm, having a sharp edge which, by pushing cup down onto fruit exterior, penetrates the rind and thus cooperates in maintaining a tight sealing.

Said lip may be an integral part of the cup by forming the cup in this manner.

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The lower part 12", of the straw under the cup 14 is provided preferably with a series of circumferentially and vertically spaced small through holes 15 to permit juice suction at different depths within the fruit.

5       The lower open end of the lower part 12" of the straw has a flute beak type angular cut which helps straw to perforate the fruit.

#### MODES FOR CARRYING OUT THE INVENTION

10       In operation the angularly cut end of straw 12 is inserted through the rind into the fruit, preferably at the point of the rind opposing the fruit stem, then the lower part 12" of the straw is manually displaced in various positions within the fruit, without extracting the straw, to open the membranes and  
15 to break the pulp of the fruit.

The cup 14 is then pushed by finger in contact with the rind thus obtaining a tight sealing of the entry hole of the straw through the rind.

The user then sucks on the upper end 13 of the straw and  
20 all the juice present at the various depths within the fruit is extracted in a more efficient way due to the tight sealing and to the presence of spaced holes 15.

In a preferred mode of operation, after inserting the straw into the fruit, the straw is then partially extracted and again  
25 inserted angularly to the vertical of the entry hole to open the membranes of the segments of the citrus fruit, then the cup 14 is pushed tightly on the rind and the juice formed into the fruit is sucked by the user; again and again repeating this operation according to various angular positions.

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When sucking no longer yields juice the straw is then partially raised and rotated within the fruit in order to break the pulp, the cup is pushed in sealing engagement with the rind and juice is sucked by the user; again and again repeating this operation at various depths within the fruit.

In this way it is possible, without squeezing the fruit, to extract at least 80% of the total amount of juice which can be obtained with the usual citrus-squeezer, without rupture of the fruit, juice leakage and soiling the hands of the user.

10 The internal and external cross-sections of the rigid straw 12 may be the same or different, preferably the internal cross-section is circular and the external one may be circular or preferably according to a geometrical sharp edge figure such as f.e. lenticular, triangular, square, rectangular or polygonal, 15 to facilitate the rupture of the membranes of the citrus fruit segments.

The internal cross-section of cup 14 and of the joined collar 16 should be the same as the external one of the straw.

The cup with the joined collar is preferably tight slidable 20 along the straw to permit adjusting straw length for use with different size citrus fruits such as orange, lemon, grapefruit or the like.

Sliding of the cup along the straw may also be obtained by forming the external surface of the middle part of the straw as 25 a worm along which the cup is moved by screwing.

The device according to the present invention is of easy construction, low cost and can be made of any suitable non-toxic material such as plastics.

In the preferred embodiment the present device is of light- 30 weight two-pieces, i.e. the straw and the cup provided with a

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collar, which can be easily assembled and disassembled, transported, put in operation, cleaned or washed by the user.

It can be made durable or disposable and permits sucking, in an efficient and economical way, practically all the juice  
5 directly from citrus fruit, without any contamination, exposure of the juice to the air and leakage.

It is of simple, clean, sanitary and amusing use especially for children.



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**CLAIMS**

1. A device for sucking juice directly from citrus fruit comprising a rigid elongated straw, the lower portion thereof being inserted into the fruit and manually displaced in  
5 various positions within the fruit to disrupt the pulp, said straw being provided with an annular cup, concave downward, sealed on the middle part of the elongated straw or tight slidable along the straw which, after said straw insertion and displacement, is pushed in contact with the  
10 surface of the fruit to provide a tight sealing around the entry hole in the rind thus preventing air to enter into the fruit when the user sucks on the straw.
2. A device according to claim 1, in which the lower portion - of the straw is provided with a series of circumferentially  
15 and vertically spaced small through holes.
3. A device according to claims 1 and 2, in which the upper part of the cup is provided with a collar.
4. A device according to claims 1-3, in which the cup is provided at its periphery with a circular rigid lip, extending  
20 downward for 0,5-2 mm, having a sharp edge.
5. A device according to claims 1-4, in which the lower open end of the straw has a flute beak type angular cut.
6. A device according to the preceeding claims, in which the external cross-section of the straw is lenticular, triangular,  
25 lar, square, rectangular or polygonal.
7. A device according to the preceeding claims, in which the external surface of the middle part of the straw is formed as a worm along which the cup is moved by screwing.

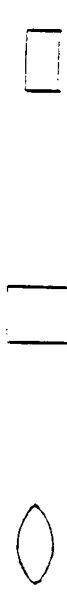
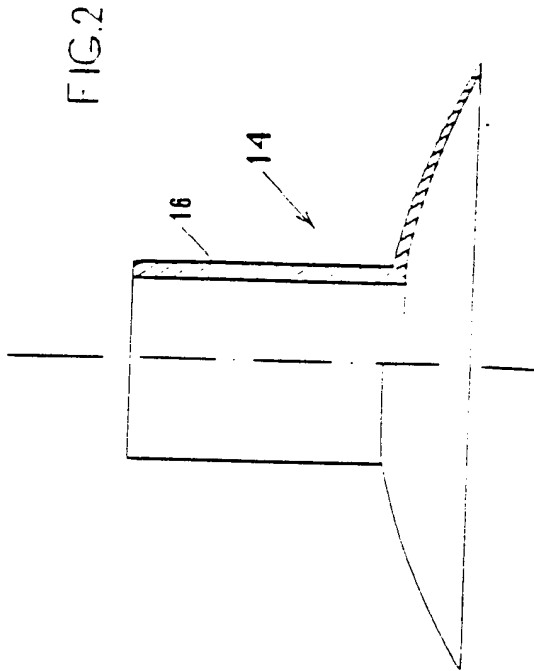
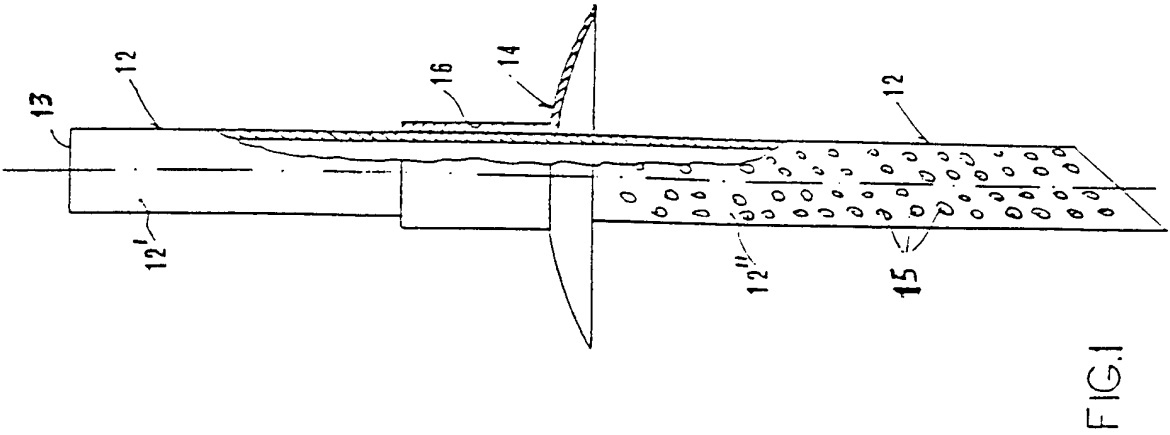


FIG.3A



FIG.3B



FIG.3C

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 94/03498

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 A47J19/02 A47G21/18

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A47J A47G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE,A,34 01 973 (SCHMELZER) 8 August 1985 see abstract; figures	1-3
Y	---	4-6
Y	US,A,1 882 065 (CODY) 11 October 1932 see page 1, line 1-2 see page 1, line 51 - line 63; figures	4,6
Y	---	
Y	GB,A,344 260 (VALE) 21 January 1932 see page 1, line 56 - line 61 see page 2, line 3 - line 15 see page 2, line 36 - line 51; figures	5,6
X	---	
X	GB,A,402 029 (GALLI) 14 December 1933 see the whole document	1-5,7
X	---	
X	US,A,2 807 205 (GILMAN) 24 September 1957 see figures	1-4,6
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26 January 1995

Date of mailing of the international search report

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## INTERNATIONAL SEARCH REPORT

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US,A,1 432 166 (DURING) 17 October 1922 see figures ---	1-3,6
A	US,A,4 889 044 (ROSENFELD) 26 December 1989 cited in the application see figures ---	1,6
A	FR,A,808 744 (LAIRESSE) 13 February 1937 see figures ---	6
A	FR,A,771 442 (DIRNAY) 8 October 1934 see figures ---	1
A	GB,A,512 309 (NOGER) 5 October 1939 see figures -----	1

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International Application No  
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-A-3401973	08-08-85	NONE	
US-A-1882065	11-10-32	NONE	
GB-A-344260		NONE	
GB-A-402029		NONE	
US-A-2807205	24-09-57	NONE	
US-A-1432166	17-10-22	NONE	
US-A-4889044	26-12-89	NONE	
FR-A-808744		NONE	
FR-A-771442		NONE	
GB-A-512309		NONE	

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FROM CITRUS FRUIT  
**PUBN-DATE:** June 29, 1995

**INVENTOR-INFORMATION:**

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**APPL-NO:** EP09403498  
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**PRIORITY-DATA:** IT00MI930983U (December 20, 1993)

**INT-CL (IPC):** A47J019/02 , A47G021/18

**EUR-CL (EPC):** A47G021/18 , A47J019/02

**ABSTRACT:**

CHG DATE=19990617 STATUS=O>The invention refers to a device for sucking juice directly from citrus

fruit comprising a rigid elongated straw (12) provided with annular cup (14), concave downward, sealed or tight slidable on the straw, said cup, after the insertion of the straw into the fruit, being pushed in contact with the surface of the fruit to provide a tight sealing of the entry hole of the straw into the fruit.